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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,400	06/26/2003	Stuart D. Downes	EMC03-07(03032)	6196
47653	7590	02/07/2006	EXAMINER	
DAVID E. HUANG, ESQ. BAINWOOD HUANG AND ASSOCIATES LLC 2 CONNECTOR ROAD - SUITE 2A WESTBOROUGH, MA 01581			JOHNSON, JONATHAN J	
			ART UNIT	PAPER NUMBER
			1725	

DATE MAILED: 02/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/607,400

Applicant(s)

DOWNES ET AL.

Examiner

Jonathan Johnson

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– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 39-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 39-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-9, and 39-41 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,866,475 (Yanagida). Yanagida teaches a circuit board fabrication stage configured to fabricate a circuit board having a set of pads (col. 1, ll. 5-20); a solder fusing stage coupled to the circuit board fabrication stage being configured to applying flux and solder and activate the flux and melt the solder to form a set of flat solder coatings (col. 1, ll. 45-62); and washing stage coupled to the solder fusing stage, the washing stage being configured to remove contamination from a surface of the circuit board having the circuit board pads (col. 1, ll. 55-60 and claim 5); print a paste onto the set of circuit boards through a metallic stencil (col. 1, ll. 45-50); remove the stencil (col. 1, ll. 55-60); deposit the paste onto the set of circuit board pads through the metallic stencil using a vapor deposition process (col. 1, ll. 45-60); provide an amount of solder paste (col. 1, ll. 55-60); supply the paste through the apertures to cover substantially half of the top surface of the pad (col. 1, ll. 55-60); remove the contamination and protecting stage (col. 1, ll. 55-60 and claim 5); where the heat can form bondings with the pad and external surfaces with high solder affinity in order to solder the smt package contacts of the ic packages during smt circuit board assembly process (col. 1, ll. 45-67). It is the examiner's position that the particular solder/flux

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composition, the amount of solder paste, and particular workpiece are process limitations that hold limited patentable weight in an apparatus claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,866,475 (Yanagida) as applied to claim 1 above and further in view of US 2,933,412 (Thayer). Thayer teaches a protection stage (col. 1, ll. 25-35). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Yanagida to utilize a protection stage after washing in order to prevent the solder from oxidizing during storage (see Yanagida col. 1, ll. 25-40).

IF IT IS SHOWN THAT YANAGIDA IS NOT CAPABLE OF PROVIDING THE CLAIMED SOLDER HEIGHT/THICKNESS, THEN THE 103 REJECTION APPLIES

Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,866,475 (Yanagida) as applied to claim 1 above and further in view of US 4,772,935 (Lawler). Lawler teaches a solder height of 0.5 mil (col. 4, ll. 45-50). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Yanagida to

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utilize the particular solder height in order to ensure a strong semiconductor bond (see Lawler col. 1, ll. 10-30).

Response to Arguments

Applicant argues Yanagida does not activate any flux and melt solder to form a set of substantially flat solder coatings. The examiner agrees. This, however, does not mean that Yanigida does not meet the claimed limitation. That is, the examiner disagrees with applicant's arguments that Yanigida does not teach "activat[ing] the flux and melt[ing] the solder to form a substantially flat solder coating which is fused to the set of circuit board pads" as required by claim 1. The examiner understands that, as with any other claim limitation, functional language is acceptable so long as it sets definite boundaries on the patent protection sought. In re Barr, 170 USPQ 33 (CCPA 1971). A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See In re Casey, 152 USPQ 235 (CCPA 1967) and In re Otto, 136 USPQ 458, 459 (CCPA 1963). To put it another way: While the features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. In the instant case, just as in applicant's invention, Yanagida teaches heating stage to form the solder structure (col. 1, ll. 45-67). It is the examiner's position that the Yanagida's heating stage would be capable of performing in the claimed manner.

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When the examiner has reason to believe that functional language asserted to be critical for establishing novelty in claimed subject matter may, in fact be a characteristic of the prior art, the burden of proof is shifted to the applicant to prove that the subject matter shown in the prior art does not possess the characteristics relied upon. *In re Fitzgerald et al.* 205 USPQ 594. The examiner notes that applicant has neither argued or provided any extrinsic evidence showing that Yanagida's heating stage cannot be performed in the claimed manner. The rejection is maintained despite applicant's traversal.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Johnson whose telephone number is 571-272-1177.

The examiner can normally be reached on M-Th 7:30 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Johnson
Primary Examiner
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